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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/976,394	10/12/2001	Linda T. Romano	A0729	2792

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EXAMINER
MANDALA, VICTOR A

ART UNIT	PAPER NUMBER
2826	

DATE MAILED: 05/16/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Offic Action Summary	Application No. 09/976,394	Applicant(s) ROMANO ET AL.	
	Examiner Victor A Mandala Jr.	Art Unit 2826	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03 March 2003* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-19* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-19* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *12 October 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Response to Amendment

1. The Applicant argues that 35 U.S.C. 112, first paragraph rejection is invalid due to the fact that the etch stop layer is present in the disclosure and can be found in Figure 6m. The examiner has reviewed the Applicant's arguments and finds them to be correct. The 35 U.S.C. 112, first paragraph rejection on claims 5-7 and 13-14 is retracted.

2. The Applicant argues that the objection to the drawings is invalid due to the fact that the etch stop layer is present in Figure 6m. The examiner has reviewed the Applicant's arguments and retracts the objection to the drawings.

3. The Applicant argues that the 35 U.S.C 102 (e) rejection anticipated by U.S. Patent No. 6,290,510 Folk et al. is invalid because Fork et al. does not teach the plated metal portion, 638-1, having a second internal stress gradient that is opposite stress than the spring metal finger. The examiner has considered the Applicant's arguments and finds them to be non-persuasive. The Office Action filed in Paper No. 6 pointed out that the reference indicates that the metal spring consists of different gradients formed there in, (Fork et al. Col. 5 Lines 25-34), in which one of the gradients formed in the metal spring has a resulting vector away from the substrate. The Office Action also points out that the second gradient has a resulting vector the opposite of the first gradient, (Fork et al. Col. 9 Lines 62-63), in which the disclosure states the metal spring remains secure to the substrate. It is inherent by these disclosed statements in Fork et al. that the gradients would be the opposite otherwise the metal spring would pull away from the substrate, just as the first gradient area of the metal spring does as seen in Fork et al.'s Figure 3g. The 35 U.S.C 102(e) rejection will stand as is.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in-
> (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or
> (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

Claims 1-9, 11-15, and 17-19 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent No. 6,290,510 Folk et al.

4. Referring to claim 1, a spring structure comprising: a substrate, (Figure 3 #301); a spring metal finger, (Figure 3 #320), including an unlifted anchor portion, (Figure 3 #322), attached to the substrate, (Figure 3 #301), and a released claw portion, (Figure 3 #320), extending over the substrate, (Figure 3 #301), wherein the anchor portion, (Figure 3 #322), has a first internal stress gradient, (Col. 5 Lines 25-34); and a stress-balancing pad, (Figure 6 #638-1), formed on the anchor, (Figure 3 #322), portion of the spring metal finger, (Figure 3 #320), wherein the stress-balancing pad, (Figure 6 #638-1), has a second internal stress gradient, (Col. 9 Lines 62-63, where the stress-balancing pad is secured to the substrate and has the opposite stress gradient than the spring metal finger, which the spring metal finger pulls away from the substrate and can be seen in Figure 6), that is opposite to the first internal stress gradient, (Col. 5 Lines 25-34).

5. Referring to claim 2, a spring structure, wherein the second internal stress gradient of the stress-balancing pad is equal in magnitude to or greater in magnitude, (Col. 9 Lines 62-63, where the stress-balancing pad is secured to the substrate and has the opposite stress gradient than the spring metal finger and it is apparent that the magnitude of the stress gradient for the stress balancing pad is equal or greater than the first internal gradient because the spring metal finger would peel away from the substrate if it was less than; this can be seen in Figure 6), than the first internal stress gradient of the anchor portion, (Col. 5 Lines 25-34).

6. Referring to claim 3, a spring structure, wherein both the spring metal finger and the stress-balancing pad, (Figure 6 #638-1), consist essentially of a single material composition, (Col. 5 Line 42 states the spring metal finger #320 can be made of MoCr and Col. 10 Line 8 states the stress balancing pad #638-1 can be made of MoCr).

7. Referring to claim 4, a spring structure, wherein the single material composition is one of Molybdenum (Mo) and Molybdenum-Chromium (MoCr), (Col. 5 Line 42 states the spring metal finger #320 can be made of MoCr and Col. 10 Line 8 states the stress balancing pad #638-1 can be made of MoCr).

8. Referring to claim 5, a spring structure, further comprising an etch stop layer formed between the anchor portion of the spring metal finger and the stress-balancing pad, (See 112 rejection above).

9. Referring to claim 6, a spring structure, wherein both the spring metal finger and the stress-balancing pad consist essentially of Molybdenum (Mo), (Col. 5 Line 42 states the spring metal finger #320 can be made of MoCr and Col. 10 Line 8 states the stress balancing pad #638-1 can be made of MoCr), and wherein the etch stop layer comprises Chromium (Cr), (See 112 rejection above).

10. Referring to claim 7, a spring structure, wherein both the spring metal finger and the stress-balancing pad consist essentially of Molybdenum-Chromium (MoCr), (Col. 5 Line 42 states the spring metal finger #320 can be made of MoCr and Col. 10 Line 8 states the stress balancing pad #638-1 can be made of MoCr), and wherein the etch stop layer comprises Titanium (Ti), (See 112 rejection above).

11. Referring to claim 8, a spring structure, wherein the spring metal finger comprises a first material, and wherein the stress-balancing pad comprises a second material that is different from the first material), (Col. 5 Line 42 states the spring metal finger #320 can be made of MoCr and Col. 10 Line 8 states the stress balancing pad #638-1 can be made of Au).

12. Referring to claim 9, a spring structure, wherein the first material consists essentially of a Molybdenum-Chromium alloy (MoCr), and wherein the stress-balancing pad consists essentially of Molybdenum (Mo), (Col. 5 Line 42 states the spring metal finger #320 can be made of MoCr and Col. 10 Line 8 states the stress balancing pad #638-1 can be made of MoCr).

13. Referring to claim 11, a spring structure, further comprising a support pad, (Figure 3 #310 & 312), formed between the substrate, (Figure 3 #301), and the anchor portion of the spring metal finger, (Figure 3 #320).

14. Referring to claim 12, a spring structure, wherein the support pad comprises one of Titanium (Ti) and Silicon (Si), (Col. 6 Lines 29-31).

15. Referring to claim 13, a spring structure, wherein the support pad comprises Ti, (Col. 6 Lines 29-31), wherein both the spring metal finger and the stress-balance portion comprise Molybdenum (Mo), (Col. 5 Line 42 states the spring metal finger #320 can be made of MoCr and Col. 10 Line 8 states the stress balancing pad #638-1 can be made of MoCr), and wherein the spring structure further comprises an etch stop layer consisting of Chromium (Cr), (See 112 rejection above), that is formed between the spring metal finger and the stress-balance portion.

16. Referring to claim 14, a spring structure, wherein the support pad comprises Si, (Col. 6 Lines 29-31), wherein both the spring metal finger and the stress-balance portion comprise Molybdenum-Chromium (MoCr), (Col. 5 Line 42 states the spring metal finger #320 can be made of MoCr and Col. 10 Line 8 states the stress balancing pad #638-1 can be made of MoCr), and wherein the spring structure further comprises an etch stop layer consisting of Titanium (Ti), (See 112 rejection above), formed between the spring metal finger and the stress-balance portion.

17. Referring to claim 15, a spring structure, wherein the support pad comprises Titanium (Ti), (Col. 6 Lines 29-31), wherein the spring metal finger comprises Molyhdenum-Chromium (MoCr), and wherein the stress-balance portion comprise Molybdenum (Mo), (Col. 5 Line 42 states the spring metal finger #320 can be made of MoCr and Col. 10 Line 8 states the stress balancing pad #638-1 can be made of MoCr).

18. Referring to claim 17, a spring structure, further comprising a conductor formed on the substrate, wherein the support pad comprises an electrically conductive material, and wherein the

spring metal finger is electrically connected to the conductor via the support pad, (Col. 5 Lines 50-53).

19. Referring to claim 18, a spring structure comprising: a substrate, (Figure 6 #601); a spring metal finger having an anchor portion, (Figure 6 #620), supported by the substrate, (Figure 6 #601), and a claw portion, (Figure 6 #620-1F), extending over the substrate, (Figure 6 #601); and a stress-balancing pad, (Figure 6 #638-1), formed over the anchor portion of the spring metal finger, (Figure 6 #620), wherein the spring metal finger, (Figure 6 #620), is formed from a first stress-engineered material having a first internal stress moment that causes the claw portion to bend away from the substrate, (Figure 6 #601), and wherein the stress-balancing pad is formed from a second stress-engineered material having a second internal moment that opposes to the first internal stress moment, (Col. 9 Lines 62-63, where the stress-balancing pad is secured to the substrate and has the opposite stress gradient than the spring metal finger, which the spring metal finger pulls away from the substrate and can be seen in Figure 6).

20. Referring to claim 19, a spring structure, wherein the first internal stress moment of the anchor portion has a first magnitude, and wherein the second internal stress moment of the stress-balancing pad has a second magnitude that is equal to or greater than the first magnitude, (Col. 5 Lines 25-34 & Col. 9 Lines 62-63, where the stress-balancing pad is secured to the substrate and has the opposite stress gradient than the spring metal finger and it is apparent that the magnitude of the stress gradient for the stress balancing pad is equal or greater than the first internal gradient because the spring metal finger would peel away from the substrate if it was less than; this can be seen in Figure 6).

Allowable Subject Matter

21. Claims 10 and 16 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Victor A Mandala Jr. whose telephone number is (703) 308-6560. The examiner can normally be reached on Monday through Thursday from 8am till 6pm..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nathan Flynn can be reached on (703) 308-6601. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

VAMJ
May 8, 2003

NATHAN J. FLYNN
SUPERVISORY PATENT EXAMINER
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